

No. 7931.

Rpt. 13.

# REPORT ON ELECTRIC FITTINGS.

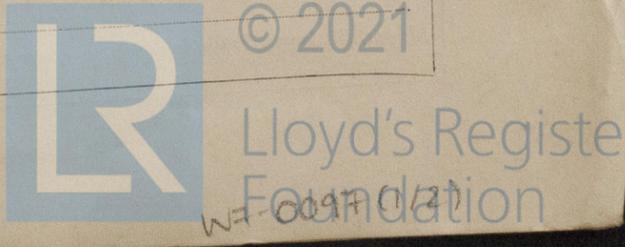
(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

17 APR 1929

Date of writing Report 28/3 1927 When handed in at Local Office 13/12 28 Port of Copenhagen.  
 No. in Survey held at Halborg. Date, First Survey 13/12 28 Last Survey 13/3 1929  
 Reg. Book. 89322 on the two single screw Motor Sault Vessel "BORGNY" (Number of Visits 7) Tons { Gross 305.2  
 Built at Halborg By whom built Halborg Mærsk. of Skibb. Yard No. 37 When built 1728-9.  
 Owners As Borga (Fred. Olsen & Co) Port belonging to Oslo.  
 Electric Light Installation fitted by F. Wibroe, Halborg. Contract No. ✓ When fitted 1927.

**System of Distribution** 2 conductors insulated system.  
**Pressure of supply for Lighting** 110 volts, Heating ✓ volts, Power 220 volts.  
**Direct or Alternating Current, Lighting** direct Power direct.  
 If alternating current system, state frequency of periods per second ✓  
 Has the **Automatic Governor** been tested and found efficient when the whole load is suddenly thrown on or off yes.  
**Generators**, do they comply with the requirements regarding rating yes., are they compound wound yes.  
 are they over compounded 5 per cent. yes., if not compound wound state distance between each generator ✓  
 Where more than one generator is fitted are they arranged to run in parallel yes. 2 of 66 kwts., is an adjustable regulating resistance fitted in series with each shunt field yes.  
 Are all terminals accessible, clearly marked, and furnished with sockets yes., are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched yes.  
**Position of Generators** placed in the motor room.  
 is the ventilation in way of the generators satisfactory yes., are they clear of all inflammable material yes.  
 if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators ✓  
 and ✓, are the generators protected from mechanical injury and damage from water, steam or oil yes.  
 are their axes of rotation fore and aft yes.  
**Earthing**, are the bedplates and frames of the generating plant efficiently earthed yes. are the prime movers and their respective generators in metallic contact yes.  
**Main Switch Boards**, where placed in the motor room.  
 If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard ✓  
**Switchboards**, are they placed in accessible positions, free from inflammable gases and acid fumes yes.  
 are they protected from mechanical injury and damage from water, steam or oil yes., if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbent materials slate and marble, is all insulation of high dielectric strength and permanently high insulation resistance yes., if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework yes.  
 and is the frame effectively earthed yes. Are the fittings as per Rule regarding:— spacing or shielding of live parts yes.  
yes., accessibility of all parts yes., absence of fuses on back of board yes., proportion of omnibus bars yes., individual fuses to voltmeter, pilot or earth lamp yes., connections of switches ✓  
**Main Switchgear**, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches for each generator: 1 double pole circuit breaker with overload & reverse current trip & single pole equalizer switch as per Sect. 3, par. 3 A (f); outgoing circuits: a 2 pole linked switch with a fuse on each pole.  
**Instruments on main switchboard** 4 ammeters 3 voltmeters ✓ synchronising device for paralleling purposes.  
**Earth Testing**, state what means are provided at the main switchboard for indicating the state of the insulation of the system 2 sets of earth lamps (220 Volts & 110 Volts), 2 Ohmmeters.  
**Switches, Circuit Breakers and Fusible Cut-outs**, do these comply with the requirements of the Rules yes.  
**Joint Boxes Section and Distribution Boards**, is the construction, protection, insulation, material, and position of these as per rule yes.



**Cables:** Single, twin, concentric, or multicore. *single & twin* are the cables insulated and protected as per Tables IV & V of the Rules *yes*.

**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *3 volts*.

**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *yes*.

**Paper Insulated Cables.** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *yes*.

**Cable Runs,** are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, cylinders or other hot objects, or to avoidable risk of mechanical damage *yes*.

**Support and Protection of Cables,** state how the cables are supported and protected *armoured cables used. In engine room laid on steel plates supported by clips, on deck carried through galvanized iron tubes.*  
*where cables are run in wood casings, are the casings and caps secured by screws yes, are the cap screws of brass yes, are the cables run in separate grooves No. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII yes.*

**Refrigerated Chambers,** if lights are fitted, are the cables and fittings in accordance with the special requirements *yes*.

**Joints in Cables,** state if any, and how made, insulated, and protected *No joints*.

**Watertight Glands and Deck Tubes,** are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands *yes*.

**Bushes in Beams and Non-watertight Partitions,** where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed *yes* state the material of which the bushes are made *yes*.

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas *yes*  
*are their connections made as per Rule yes*

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule *yes*.

**Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven *yes*.

**Navigation Lamps,** are these separately wired *yes*, controlled by separate switch and separate fuses *yes*, are the fuses double pole *yes*, are the switches and fuses grouped in a position accessible only to the officers on watch *yes*, has each navigation lamp an automatic indicator as per Rule *yes*.

**Secondary Batteries,** are they constructed and fitted as per Rule *yes*.

**Fittings,** are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *yes*, are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected *yes*  
*are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected lamps in pump room contained in gastight glass globes protected by iron grids, through galvanized iron tubes carried gastight into fittings, how are the cables led where are the controlling switches situated on auxiliary switch board inside engine casing top.*

**Searchlight Lamps, No. of** *yes*, whether fixed or portable *yes*, are their fittings as per Rule *yes*.

**Arc Lamps,** other than searchlight lamps, No. of *yes*, are their live parts insulated from the frame or case *yes*, are their fittings as per Rule *yes*.

**Motors,** are their working parts readily accessible *yes*, are the coils self-contained and readily removable for replacement *yes*, are the brushes, brush holders, terminals and lubricating arrangements as per Rule *yes*, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material *yes*, are they protected from mechanical injury and damage from water, steam or oil *yes* are their axes of rotation fore and aft *yes*, if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type *yes*, if not of this type, state distance of the combustible material horizontally or vertically above the motors *yes* and *yes*.

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule *yes*.

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule *yes*.

**Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings *yes*.  
 If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *portable lamps not supplied.*

PARTICULARS OF GENERATING PLANT.

| DESCRIPTION OF GENERATOR | No of | RATED AT  |       |         |               | DRIVEN BY            | WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE |                        |
|--------------------------|-------|-----------|-------|---------|---------------|----------------------|---|------------------------|
|                          |       | Kilowatts | Volts | Ampères | Revs per Min. |                      | Fuel Used                                     | Flash Point of Fuel    |
| MAIN                     | 2     | 33        | 220   | 300     | 400           | 2400                 | Diesel oil engine                             | crude oil above 150° F |
| AUXILIARY                | 1     | 7.5       | 110   | 70      | 500           | Steam engine         |   |                        |
| EMERGENCY                |       |           |       |         |               |                      |   |                        |
| ROTARY TRANSFORMER       | 1     | 10        | 110   | 91      | 1700          | 15 HP Electric motor |   |                        |

LIGHTING AND HEATING CONDUCTORS.

| Ref. No. | DESCRIPTION            | No. of Conductors | Effective Area of each Conductor Sq. Ins. per Sq. In. | COMPOSITION OF STRAND |                | Total Maximum Current Ampères | Approximate Length (Lead and Return) Feet | Insulated with | HOW PROTECTED   |
|----------|------------------------|-------------------|---|-----------------------|----------------|-------------------------------|---|----------------|---|
|          |                        |                   |   | No.                   | Diameter in/in |                               |   |                |   |
|          | MAIN GENERATOR         | 2                 | 75  | 19                    | 2.52           | 300                           | 164-51                                    | India rubber   | all the cables  |
|          | EQUALISER CONNECTIONS  | 1                 | 50  | 17                    | 1.83           | 70                            | 82-28                                     | "              | as lead covered   |
|          | AUXILIARY GENERATOR    | 2                 | 35  | 19                    | 1.53           | 70                            | 170                                       | "              | ant steel wire armoured   |
|          | EMERGENCY GENERATOR    |                   |   |                       |                |                               |   |                |   |
|          | ROTARY TRANSFORMER     | 2                 | 50  | 19                    | 1.83           | 91                            | 50  | "              | under floor plates and on decks and elsewhere where special necessary |
|          | AUXILIARY SWITCHBOARDS |                   |   |                       |                |                               |   |                |   |
|          | ENGINE ROOM            |                   |   |                       |                |                               |   |                |   |
|          | BOILER ROOM            |                   |   |                       |                |                               |   |                |   |
|          | ACCOMMODATION OFFICERS | 2                 | 6   | 7                     | 1.05           | 20                            | 79  | "              | carried through galvanized iron tubes or protected by wood casings    |
|          | SALOON                 | 2                 | 10  | 7                     | 1.35           | 27                            | 295                                       | "              |   |
|          | NAVIGATION             | 2                 | 2.5   | 7                     | 0.67           | 16                            | 320                                       | "              |   |
|          | WIRELESS               | 2                 | 10  | 7                     | 1.35           | 18                            | 328                                       | "              |   |
|          | SEARCHLIGHT            |                   |   |                       |                |                               |   |                |   |
|          | MASTHEAD LIGHT         | 1                 | 1.5   | 1                     | 1.38           | 1                             | 310                                       | "              |   |
|          | SIDE LIGHTS            | 1                 | 1.5   | 1                     | 1.38           | 1                             | 72  | "              |   |
|          | COMPASS LIGHTS         | 1                 | 1.5   | 1                     | 1.38           | 0.10                          | 50  | "              |   |
|          | POOP LIGHTS            | 1                 | 1.5   | 1                     | 1.38           | 1                             | 420                                       | "              |   |
|          | CARGO LIGHTS           |                   |   |                       |                |                               |   |                |   |
|          | ARC LAMPS              |                   |   |                       |                |                               |   |                |   |
|          | HEATERS                |                   |   |                       |                |                               |   |                |   |

MOTOR CONDUCTORS.

| Ref. No. | DESCRIPTION   | No. of Motors | Effective Area of each Conductor Sq. Ins. per Sq. In. | COMPOSITION OF STRAND |                | Total Maximum Current Ampères | Approximate Length (Lead and Return) Feet | Insulated with | HOW PROTECTED |
|----------|---|---------------|---|-----------------------|----------------|-------------------------------|---|----------------|---------------|
|          |   |               |   | No.                   | Diameter in/in |                               |   |                |               |
| 9        | BALLAST PUMP  | 1             | 10  | 7                     | 1.55           | 33                            | 120                                       | "              | "             |
|          | MAIN BILGE LINE PUMPS   |               |   |                       |                |                               |   |                |               |
|          | GENERAL SERVICE PUMP  |               |   |                       |                |                               |   |                |               |
| 9        | EMERGENCY BILGE PUMP AND SANITARY PUMP                                    | 1             | 10  | 7                     | 1.35           | 33                            | 132                                       | "              | "             |
| 15       | CIRC. SEA WATER PUMPS AND LUBRICAT. OIL PUMPS AND CIRC. FRESH WATER PUMPS | 1             | 35  | 19                    | 1.53           | 50                            | 111                                       | "              | "             |
|          | AIR COMPRESSOR  |               |   |                       |                |                               |   |                |               |
|          | FRESH WATER PUMP  |               |   |                       |                |                               |   |                |               |
| 2        | ENGINE TURNING GEAR   | 1             | 4   | 7                     | 0.85           | 7                             | 108                                       | "              | "             |
|          | ENGINE REVERSING GEAR   |               |   |                       |                |                               |   |                |               |
| 9        | LUBRICATING OIL PUMPS AND OIL FUEL TRANSFER PUMP                          | 1             | 10  | 7                     | 1.35           | 30                            | 105                                       | "              | "             |
|          | WINDLASS  |               |   |                       |                |                               |   |                |               |
|          | WINCHES, FORWARD  |               |   |                       |                |                               |   |                |               |
|          | WINCHES, AFT  |               |   |                       |                |                               |   |                |               |
|          | STEERING GEAR   |               |   |                       |                |                               |   |                |               |
| 11.5     | (a) MOTOR GENERATOR   | 1             | 16  | 7                     | 1.70           | 38                            | 200                                       | "              | "             |
|          | (b) MAIN MOTOR  |               |   |                       |                |                               |   |                |               |
| 3        | WORKSHOP MOTOR  | 1             | 4   | 7                     | 0.85           | 10                            | 132                                       | "              | "             |
|          | VENTILATING FANS  |               |   |                       |                |                               |   |                |               |
| 15       | MOTOR-GEN. FOR LIGHT  | 1             | 35  | 19                    | 1.53           | 50                            | 50  | "              | "             |
| 1        | FUEL OIL SEPARATOR  | 1             | 2.5   | 7                     | 0.67           | 3.5                           | 44  | "              | "             |
| 0.75     | LEAK OIL  | 1             | 2.5   | 7                     | 0.67           | 3                             | 180                                       | "              | "             |

All Conductors are of annealed copper conforming to British Standard Specification No. 7.  
 The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.  
 The foregoing is a correct description.

*J. Wilson* Electrical Engineers. Date 5-4-29

**COMPASSES.**

Distance between electric generators or motors and standard compass 20'  
 Distance between electric generators or motors and steering compass 19'  
 The nearest cables to the compasses are as follows:—  
 A cable carrying 0.1 Ampères 10" feet from standard compass 10" feet from steering compass.  
 A cable carrying 5.5 Ampères 5 feet from standard compass 5 1/2 feet from steering compass.  
 A cable carrying 1.1 Ampères 4 feet from standard compass 4 1/2 feet from steering compass.  
 Have the compasses been adjusted with and without the electric installation at work at full power yes.  
 Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted yes.  
 The maximum deviation due to electric currents was found to be 0 degrees on any course in the case of the standard compass, and 0 degrees on any course in the case of the steering compass.

AKTIESELSKABET  
 AALBORG MASKIN- OG SKIBSBYGGERI Builder's Signature. Date 9/4-1929  
*H. Mygind*

Is this installation a duplicate of a previous case No. If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.)

The Electric Light & Power Installation as above described has been fitted in accordance with the Rules requirements, the approved plans and the requirements contained in the Surveyor's letter E dated 20-9-28.

The material used is of good description throughout and the workmanship of high quality.

On completion the whole installation was tested under full power working conditions and found satisfactory.

Recommend the vessel to have notation of ELECTRIC LIGHT in the Register Book.

It is submitted that  
 this vessel is eligible for  
 THE RECORD — ELEC. LIGHT.

YRM *J.S.M.*  
 19.4.29

Total Capacity of Generators 73.5 Kilowatts.

The amount of Fee ... £ 542.36 : When applied for, 15.4.29  
 Travelling Expenses (if any) £ — : When received, 6.5.29

*Chubb*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute 106. 23 APR 1929

Assigned Elec Light

Im. 228. Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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